ABSTRACT

An object of the invention is to provide a nonvolatile semiconductor memory device and an erase method for a memory cell array that have high degree of freedom and that are capable of quickly and securely implementing data erase and reprogramming. In a memory cell array, memory cells each configured of a variable resistor element for storing information through variations in electric resistance and a selected transistor are arranged in a matrix, and word lines (WL1, ..., WLm) and bit lines (BL1, ..., BLn) are arranged to select a predetermined memory cell. For the memory cell array, erase means is provided that sets the electric resistance of the variable resistor element to a predetermined erased state by applying voltage under a predetermined application condition to the word line (WL), bit line (BL), and source line (SL). The erase means switches between a batch-erase mode and an individual-erase mode. The batch-erase mode is used to perform batch erase of all the memory cells in the memory cell array, and the individual-erase mode is used to perform individual erase of a part of the memory cells in the memory cell array.

Reference Drawing: Fig. 1